

FIG. 1

Atmospheric environment zone		I			II			III			IV			V		
Environmental factors		Measured value	Evaluation point		Measured value	Evaluation point		Measured value	Evaluation point		Measured value	Evaluation point		Measured value	Evaluation point	
Temperature (°C)	A	≤20	1		≤25	2		≤30	4		≤35	8		>35	12	
Relative humidity (%RH)	B	≤60	1		≤65	6		≤70	12		≤80	24		>80	36	
Corrosive gas (mdd)	SO ₂	≤0.02	1		≤0.05	4		≤0.2	8		≤0.5	16		>0.5	24	
	H ₂ S	≤0.02	1		≤0.05	6		≤0.2	12		≤0.5	24		>0.5	36	
	NO ₂	≤0.02	1		≤0.05	3		≤0.2	6		≤0.5	12		>0.5	18	
	Cl ⁻	≤0.02	1		≤0.05	7		≤0.2	14		≤0.5	28		>0.5	42	
	NH ₃	≤0.02	1		≤0.1	3		≤1.0	6		≤10	12		>10	18	
Sea salt particle	Sea salt particle (mdd)	≤0.01	1		≤0.03	5		≤0.1	10		≤0.3	20		>0.3	30	
	Distance from coast (km)	>2.0			≥1.5			≥1.0			≥0.5			<0.5		

FIG.2

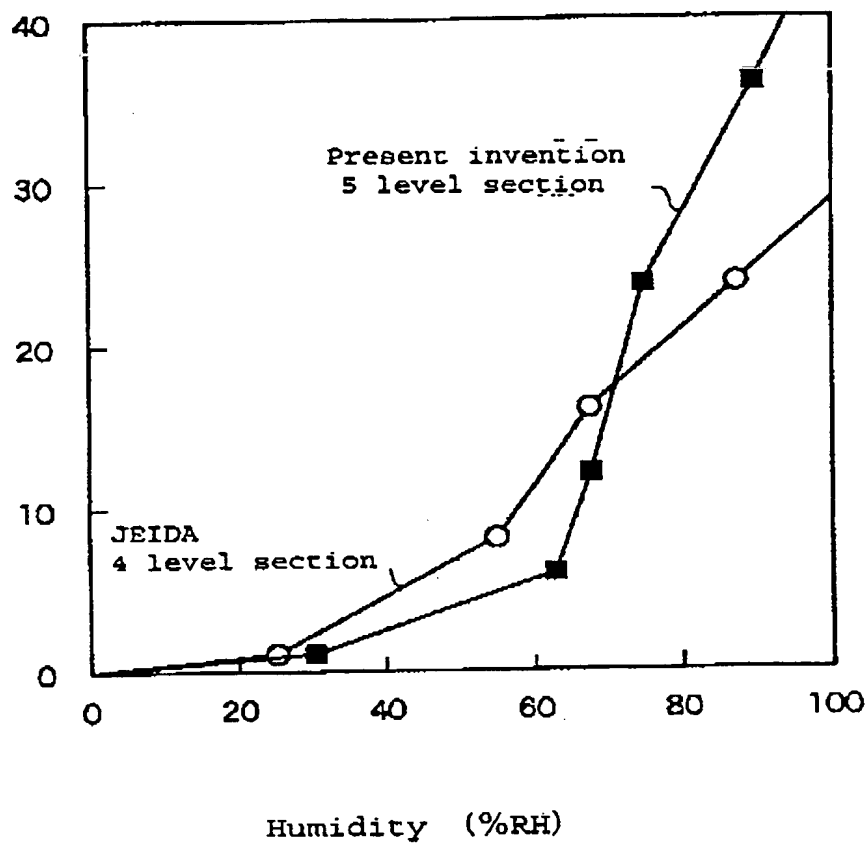


FIG. 3

JEIDA-29-1990 Dividing into four stage classes

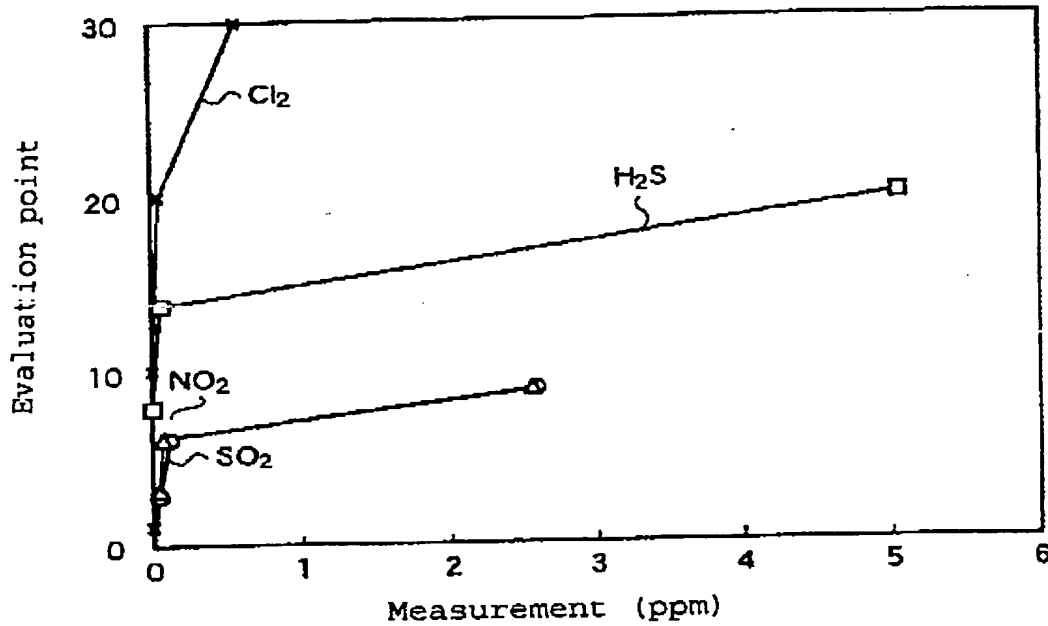


FIG. 4 A

Present invention Dividing into five point classes

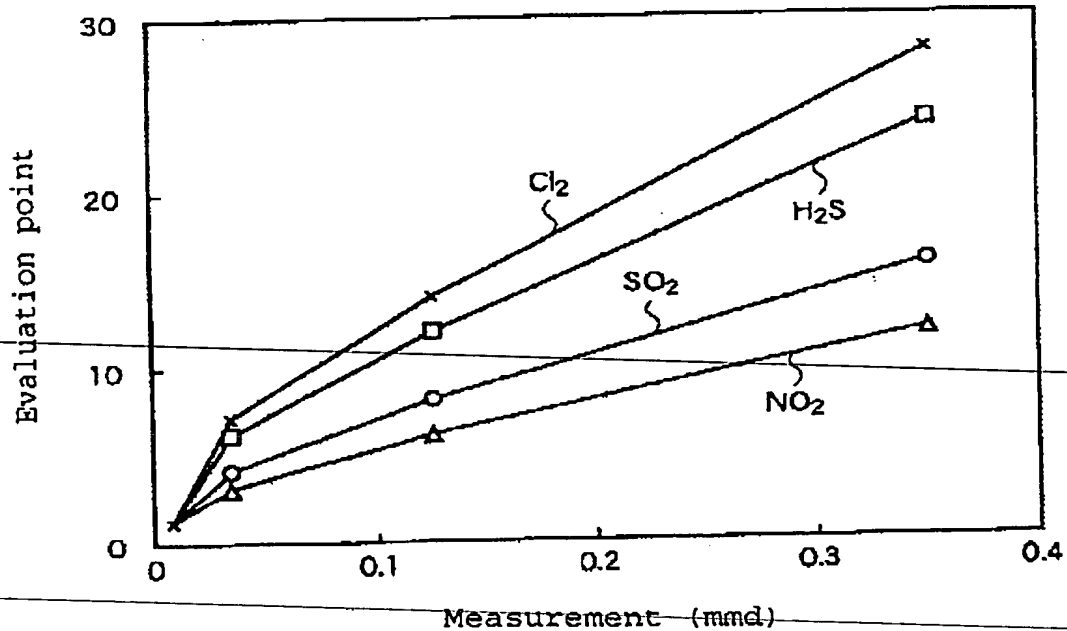


FIG. 4 B

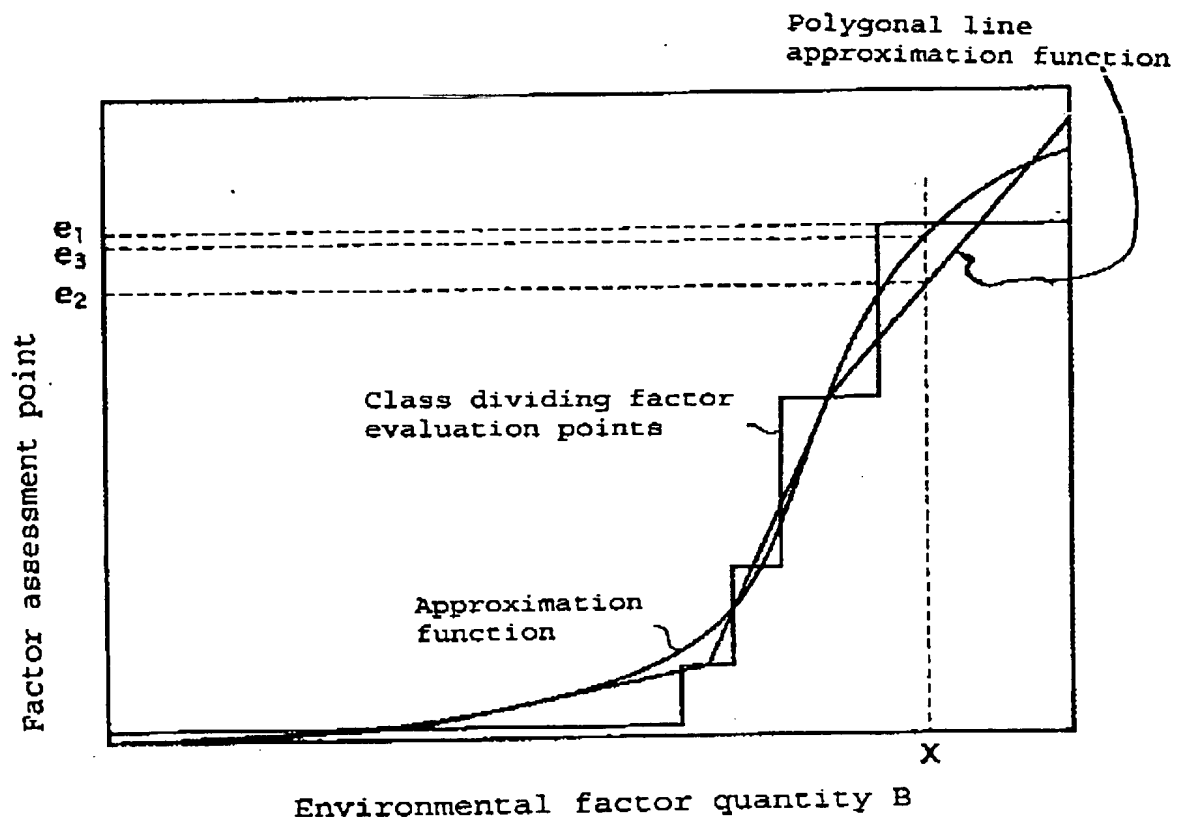


FIG. 5

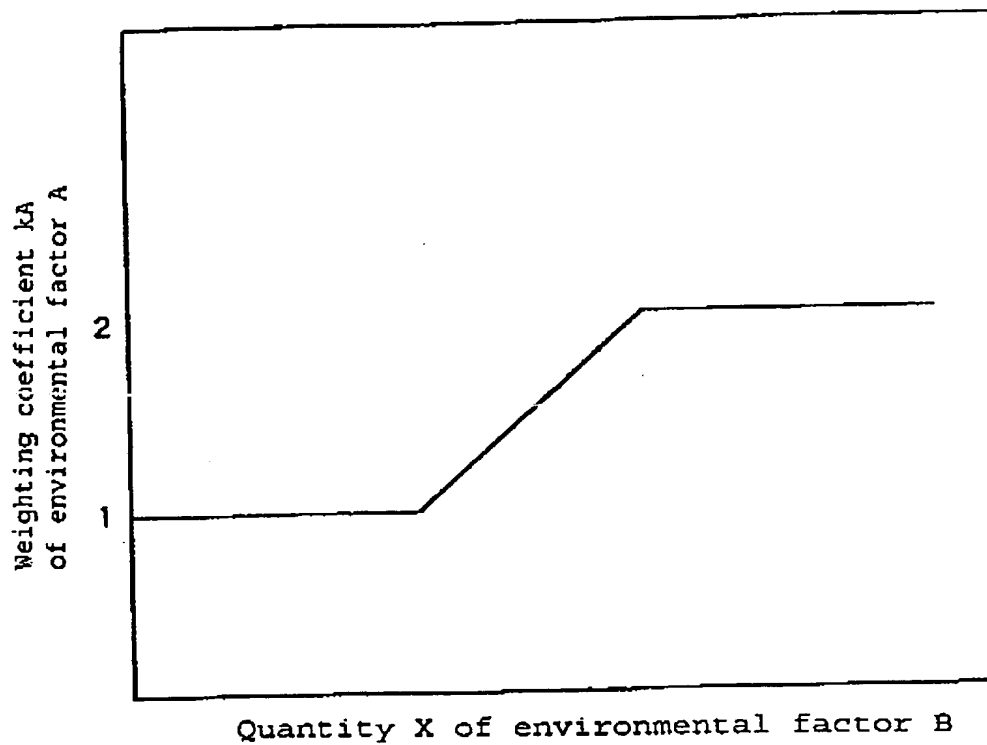


FIG. 6

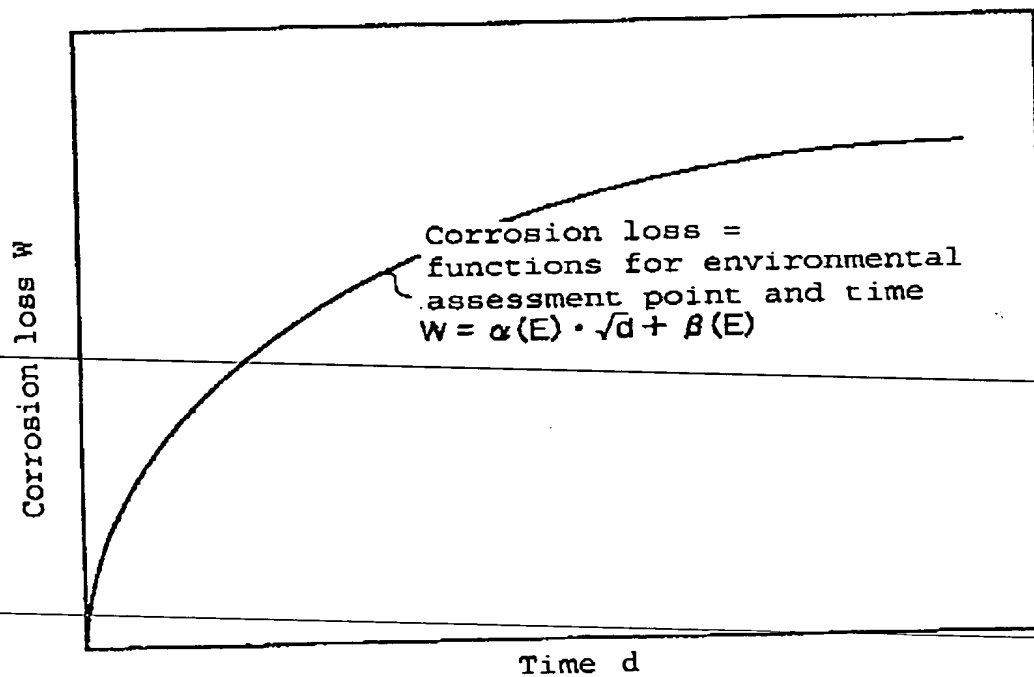


FIG. 7

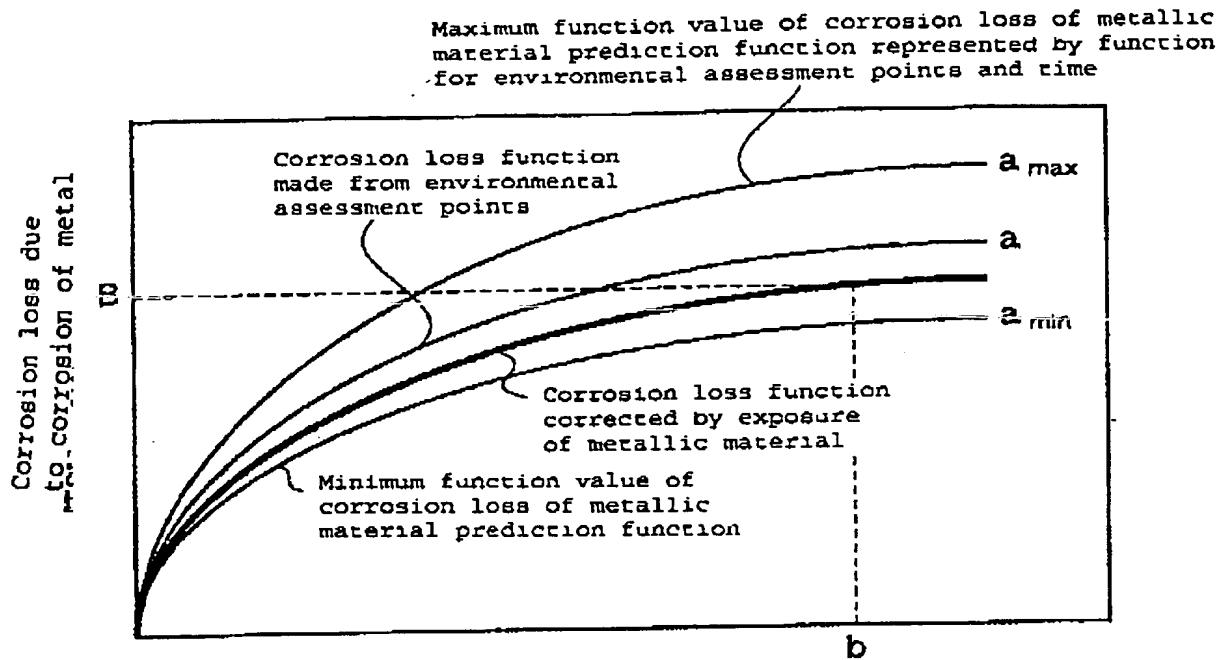


FIG. 8

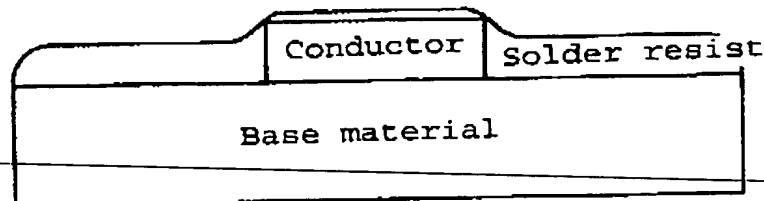
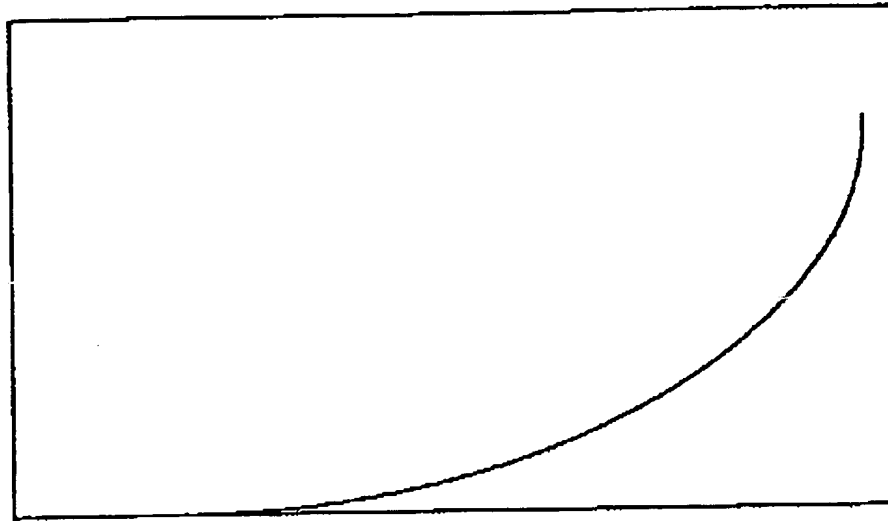


FIG. 9

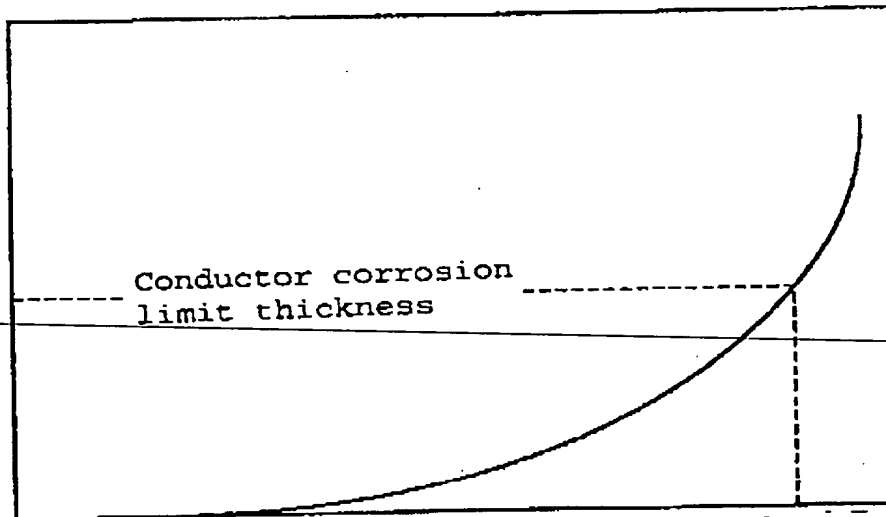
Thickness of corrosion of a conductor



Amount of corroded copper

FIG. 10A

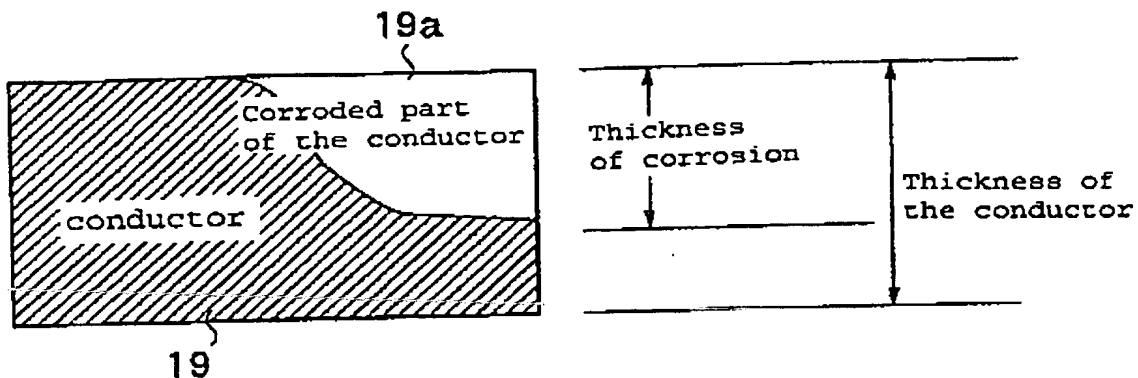
Thickness of corrosion of a conductor



Amount of corroded copper

Limit for an amount of corrosion

FIG. 10B



$$\text{Corrosion loss rate} = \left(\frac{\text{thickness of corrosion}}{\text{thickness of the conductor}} \right) \times 100$$

FIG. 1 1

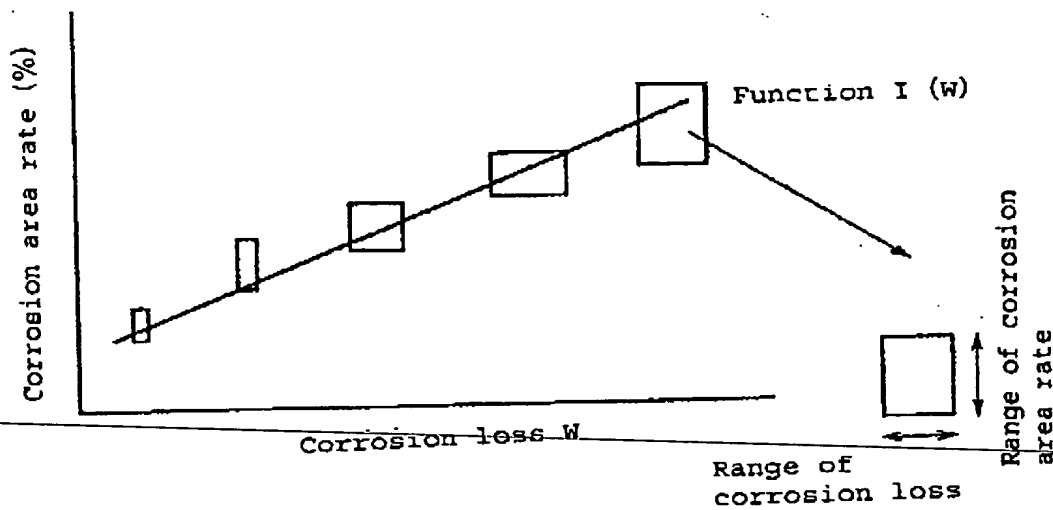


FIG. 1 2

IC type	Year	Manufacturer	Sealing resin	Chip protective film	Other...	Correlation function I(W)
IC1	1982	T Inc.	Epoxy blend - - -	PSG		$I_1(W)$
IC2	1979	N Inc.	Epoxy blend - - -	None		$I_2(W)$
IC3	1992	H Inc.	Polyimide blend - - -	SIN		$I_3(W)$
...

FIG. 13

IC type	Year	Manufacturer	Sealing resin	Chip protective film	Other...	Change of time sequence of aluminium wiring corrosion area rate $U_i = h_i(t)$ Correlation function $F(u)$ of aluminium wiring corrosion area rate and faults
IC1	1982	T Inc.	Epoxy blend - - -	PSG		$U_1 = m_1(t), F_1 = n_1(u)$
IC2	1979	N Inc.	Epoxy blend - - -	None		$U_2 = m_2(t), F_2 = n_2(u)$
IC3	1992	H Inc.	Polyimide blend - - -	SiN		$U_3 = m_3(t), F_3 = n_3(u)$
...

FIG. 14

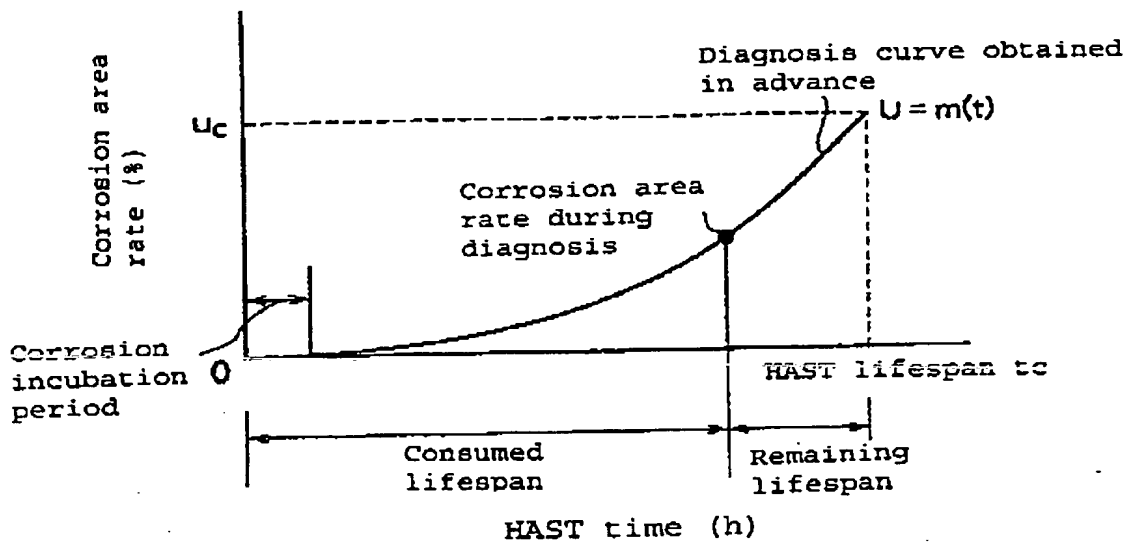


FIG. 1 5

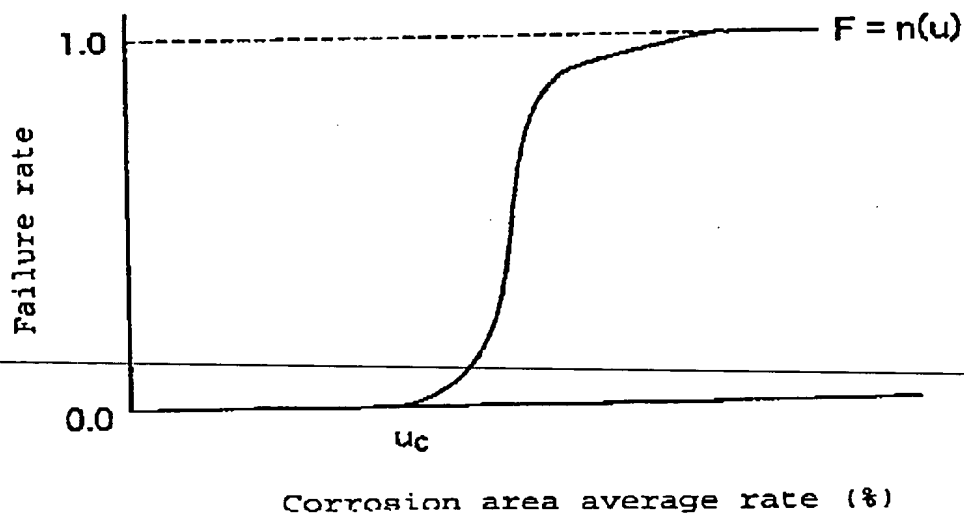


FIG. 1 6

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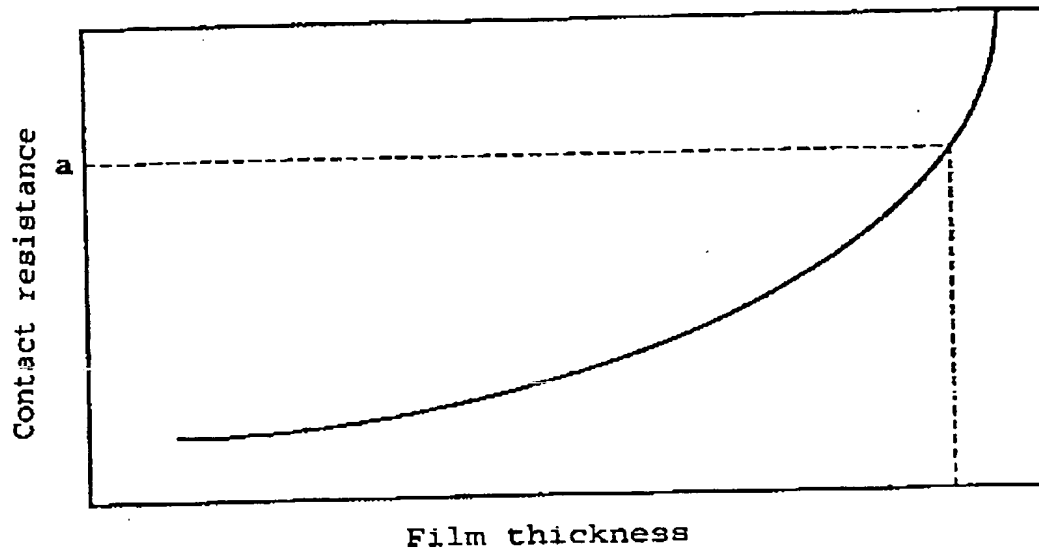


FIG. 17

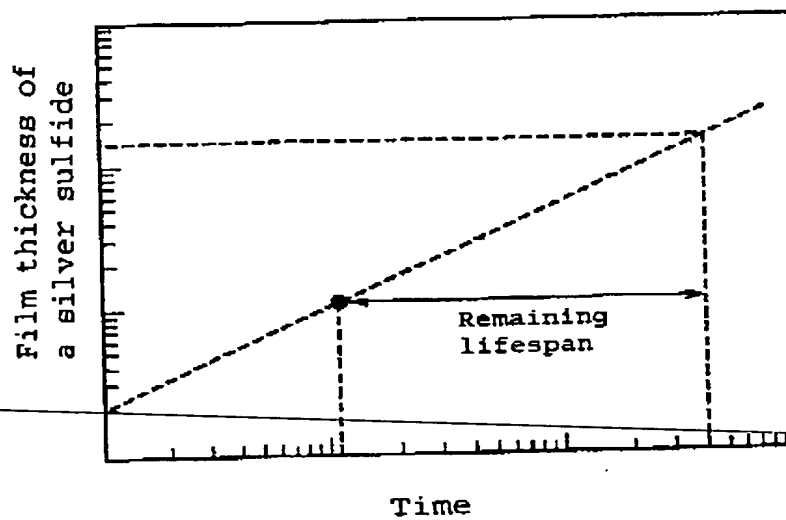


FIG. 18

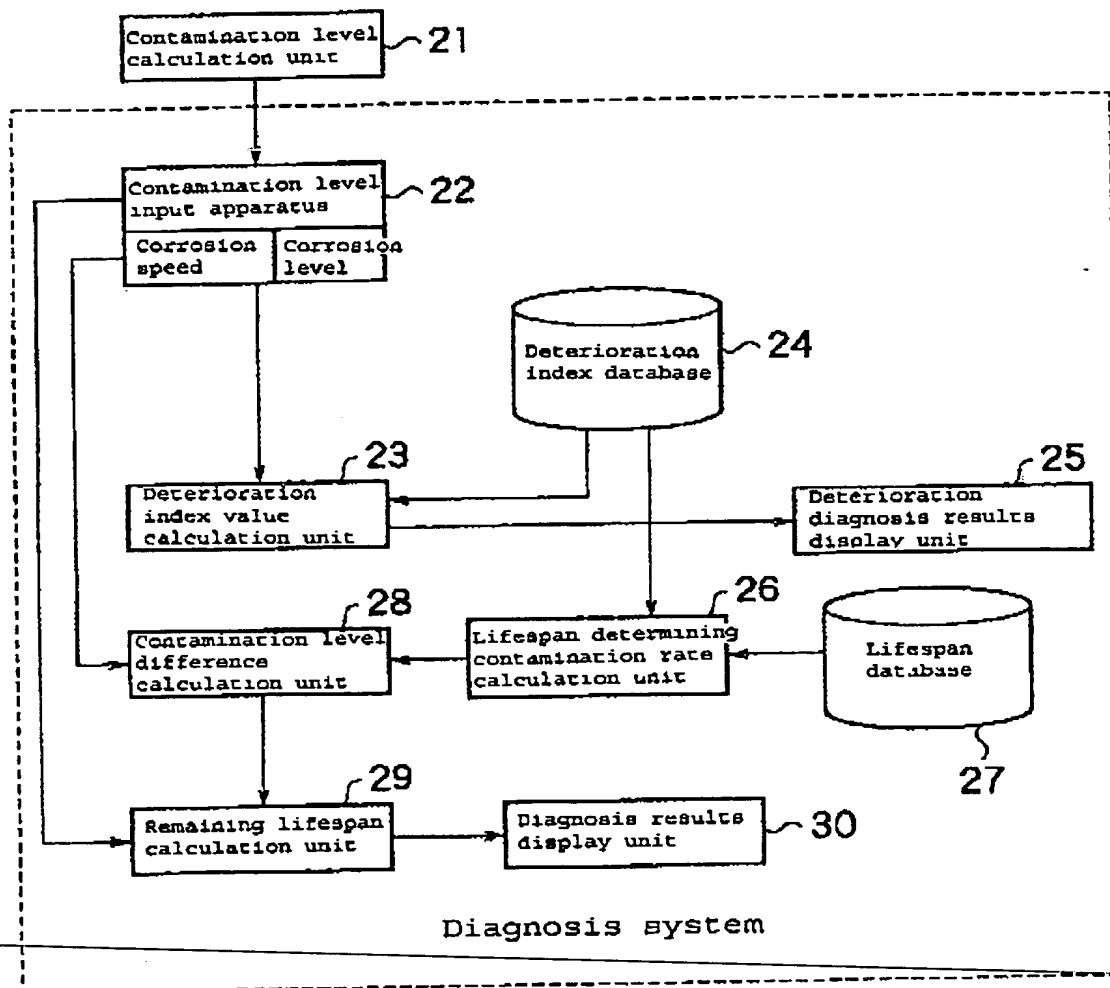


FIG. 19

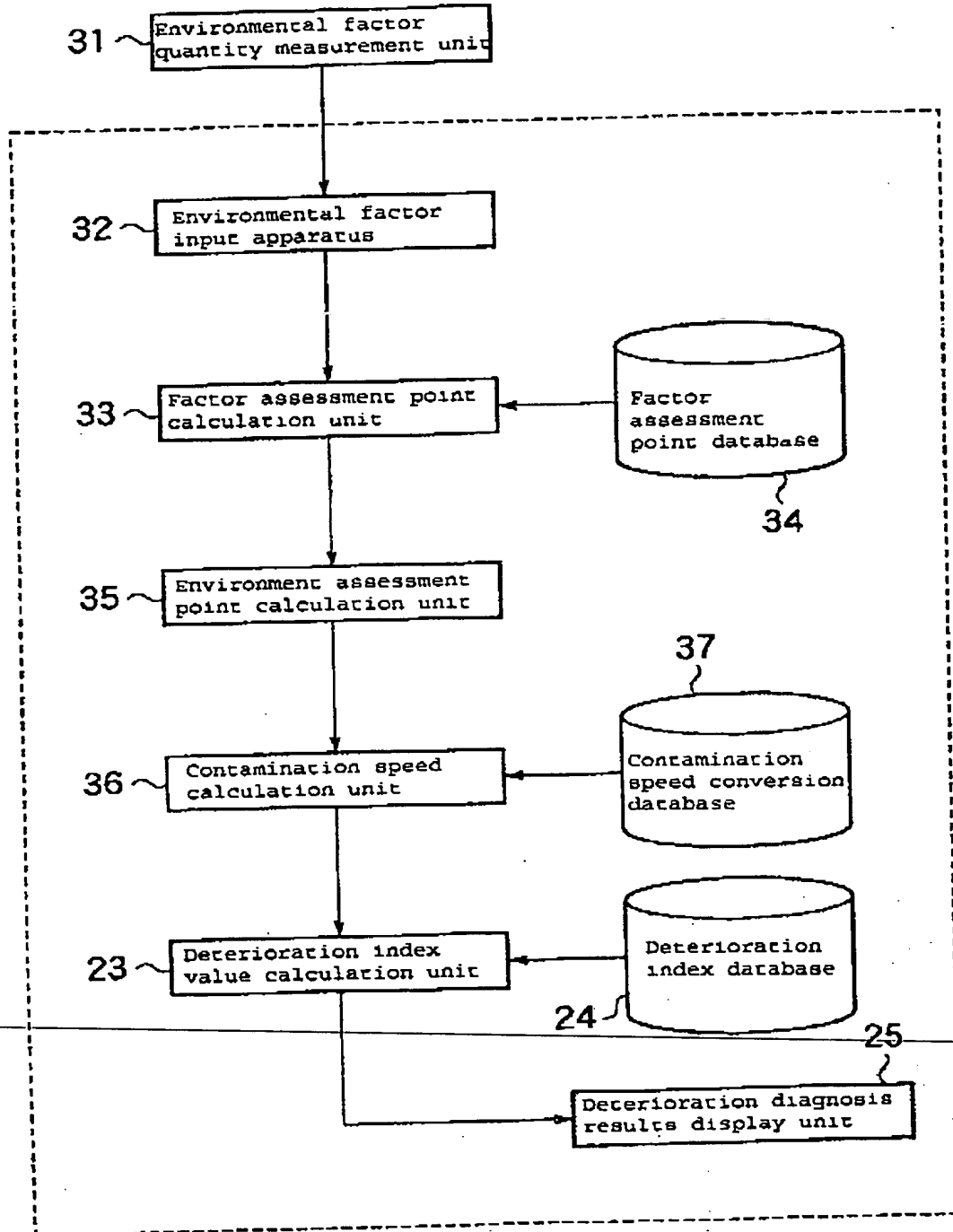


FIG. 20

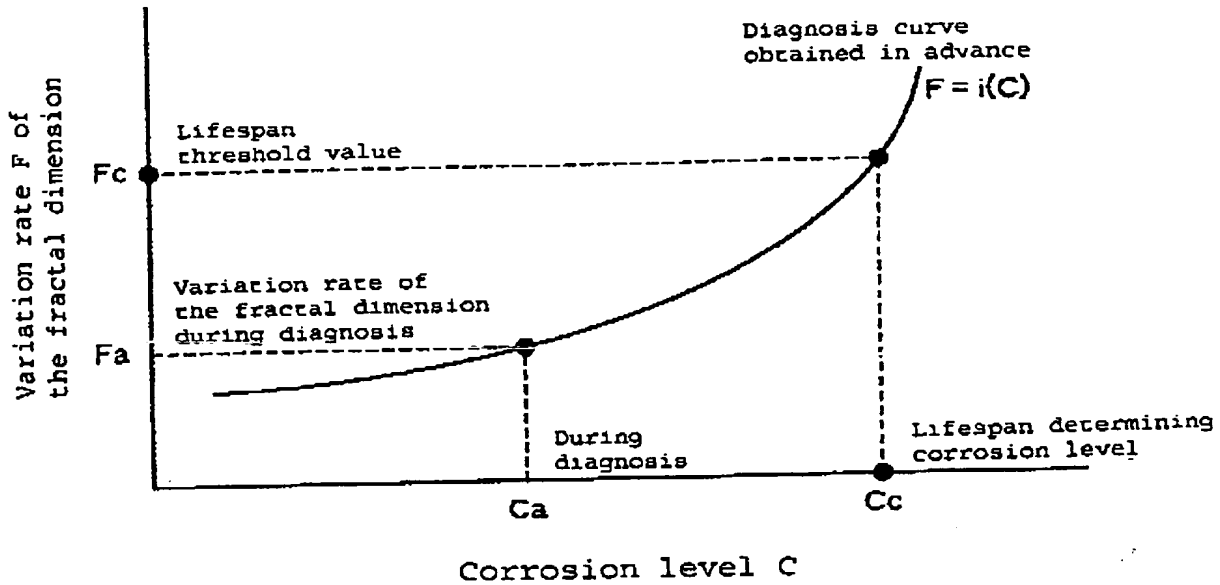


FIG. 2 1

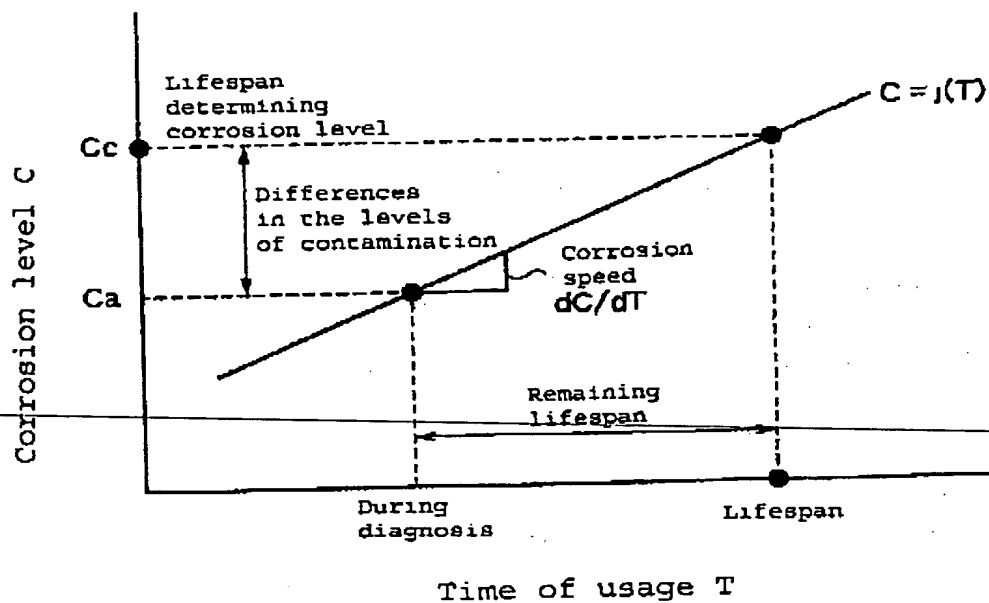


FIG. 2 2

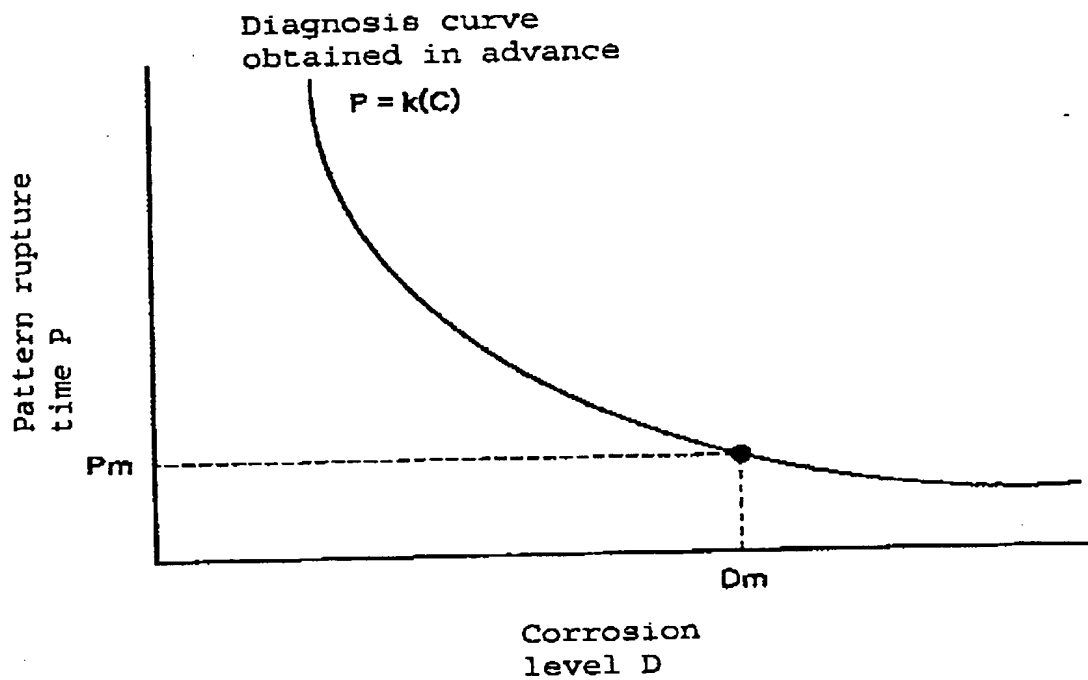


FIG. 2 3

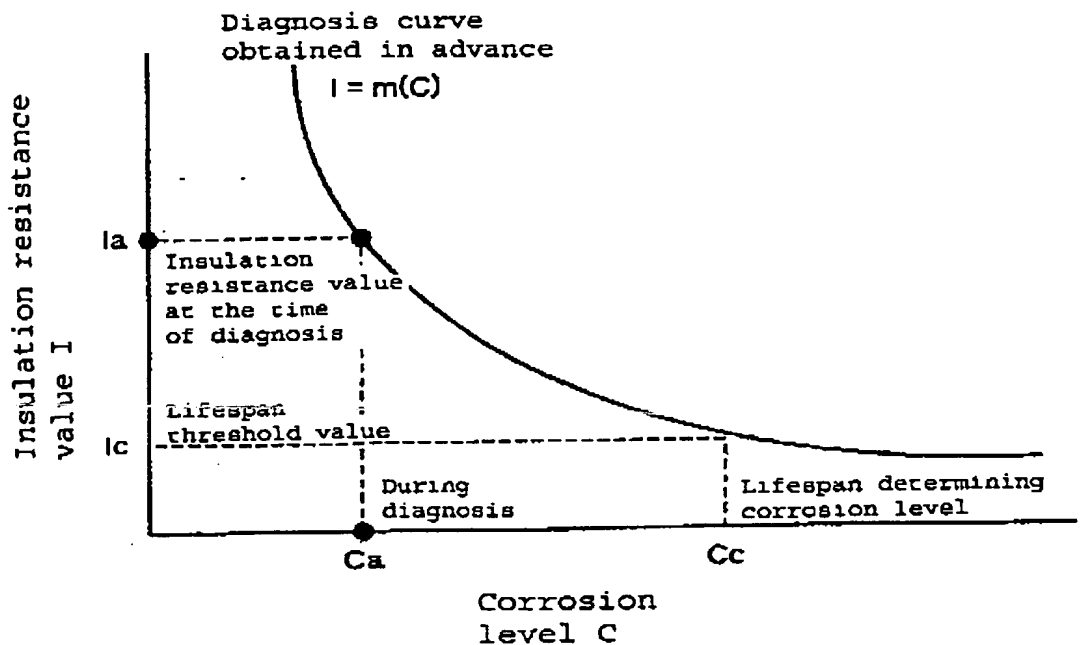


FIG. 2 4

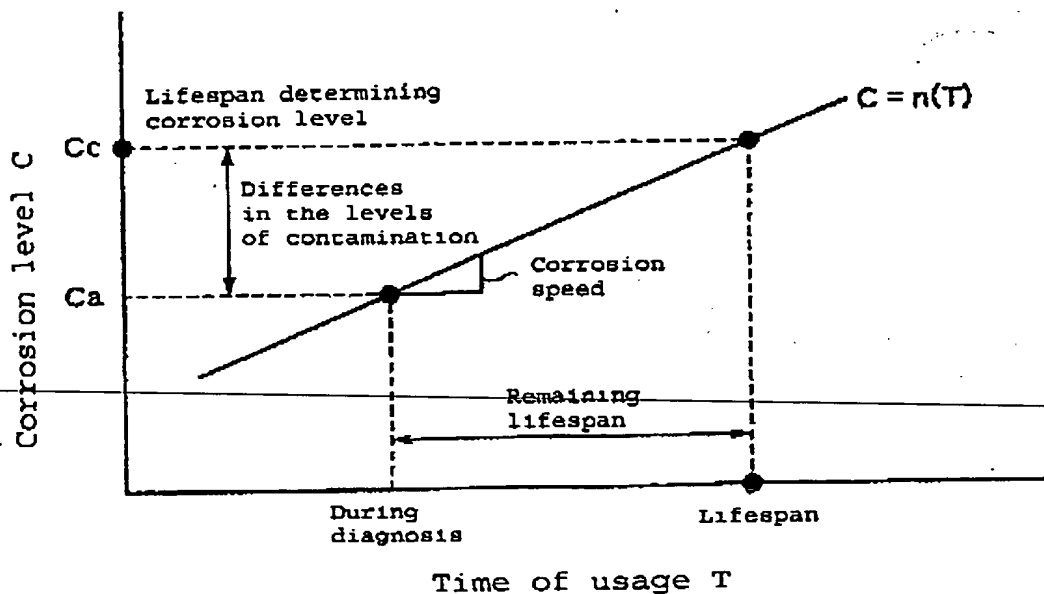


FIG. 2 5